**Magnetism and Electricity Overview**

**VA SOL**

PS.11 The student will investigate and understand basic principles of electricity and magnetism.

**VA SOL objectives**

PS.11.1 Explain how static electricity and current electricity move within circuits. **(SOL PS.11.a)**

PS.11.2 Explain the relationship between a magnetic field and an electric current. **(SOL PS.11.b)**

PS.11.3 Describe electromagnets, motors, and generators and their uses. **(SOL PS.11.c)**

PS.11.4 Describe conductors, semiconductors, and insulators. **(SOL PS.11.d)**

**Vocabulary**

Conduction induction friction semiconductor insulator source

Magnetic field magnetic domain magnetism electromagnet

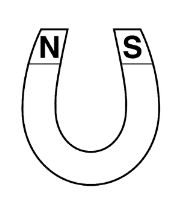
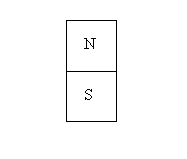
Thermocouple photocell circuit series circuit parallel circuit superconductor

Resistance ohms ohm’s law resistance current

Alternating current direct current conservation

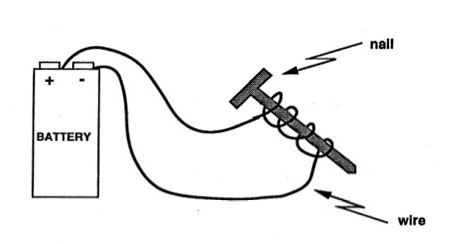
**Know**

1. Draw in the magnetic field for each of the following:

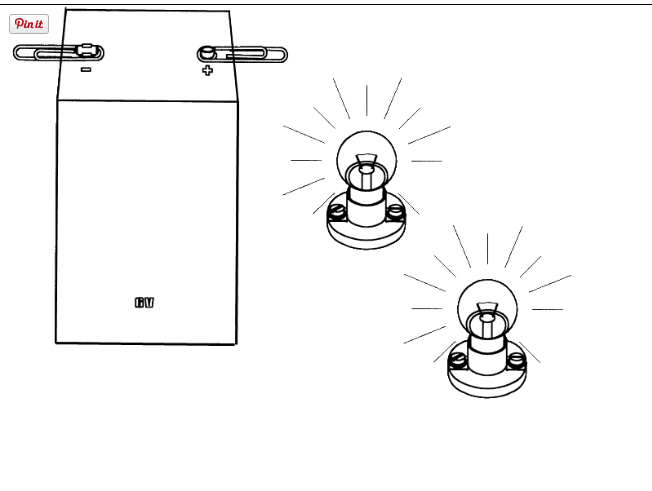
 



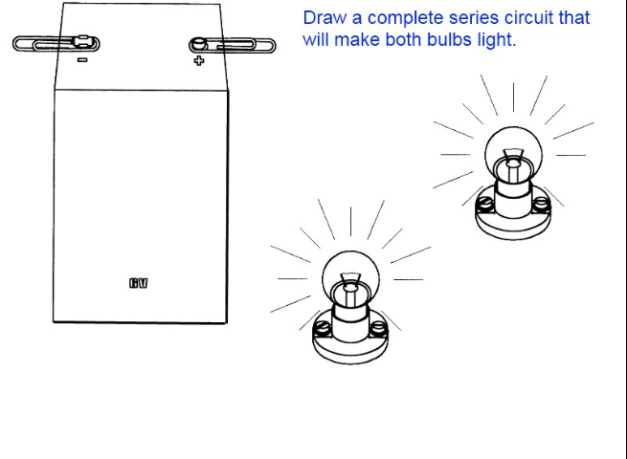
1. What is a magnetic domain?
2. How can you make this electromagnet stronger?



1. How does the earth’s magnetic field protect us?
2. What is Ohm’s law and what does it tell you about the resistance inside a wire?
3. What is a superconductor?
4. Draw a complete parallel circuit that will make both bulbs light.



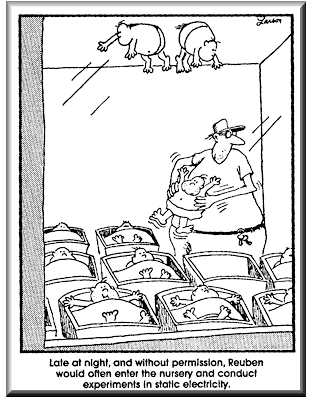
8. Draw a complete series circuit that will make both bulbs light.



1. What should his Dad have told him to be scientifically accurate?



1. Match the words with their correct definitions.
2. Conductor i. uses heat to generate electricity
3. Insulator ii. Has only one path for electrons to travel
4. Alternating current iii. Works against the flow of electrons
5. Direct current iv. Allows heat/electricity to go through
6. Resistance v. Electrons switch directions constantly
7. Photocell vi. Will not allow heat/electricity to go through
8. Thermocouple vii. Transfer of electrons through direct contact
9. Conduction viii. Uses light to generate electricity
10. Explain the three ways that electricity can be transferred.
11. List at least four things that families can do to conserve electricity.
12. Explain this comic in scientific terms.



1. Why are diodes, transistors, and resistors used in electrical devices? What is the job for each?
2. What color of wire represents positively charged, negatively charged, and/or a ground wire?